08/009,833

UNITED STATES DEPARTMENT OF COMMERCE
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SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/009,833	01/27/93	ROBINSON	UMMC91-03A

EXAMINER: SMITH, L.

ART UNIT: 1811 | PAPER NUMBER: 22

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DATE MAILED: 11/13/95

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☐ This application has been examined ☒ Responsive to communication filed on 8/25/95 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), 0 days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☒ Notice of References Cited by Examiner, PTO-892.
2. ☐ Notice of Draftsman's Patent Drawing Review, PTO-948.
3. ☐ Notice of Art Cited by Applicant, PTO-1449.
4. ☐ Notice of Informal Patent Application, PTO-152.
5. ☐ Information on How to Effect Drawing Changes, PTO-1474..
6. ☐ _____.

Part II SUMMARY OF ACTION

1. ☒ Claims 1, 2, 4, 7-14, 17-24 are pending in the application.
   Of the above, claims _____ are withdrawn from consideration.
2. ☒ Claims 3, 5, 6, 15, 16 have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 1, 2, 4, 7-14, 17-24 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____. has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).
12. ☐ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____ ; filed on _____.
13. ☐ Since this application apppears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

EXAMINER'S ACTION

PTOL-326 (Rev. 2/93)

15. The examiner acknowledges receipt of the after final amendment filed under 37 CFR 1.129(a). The finality of the last office action is withdrawn.

16. Claims cancelled in this application are claims 3, 5, 6, 15 and 16. Claims pending and under consideration are claims 1, 2, 4, 7-14, and 17-24.

17. Upon further consideration by the examiner and in view of applicant's remarks the rejection of claims 1, 2 and 4 under 35 U.S.C. §103 as being obvious over King is withdrawn.

Applicant's arguments filed 8/25/95 have been fully considered and are deemed to be persuasive only in part.

18. The objection to the specification and rejection of claims 1, 2, 4, 7-14, 17-20, 22 and 23 under 35 U.S.C. §112 first paragraph as failing to adequately teach how to make and/or use the invention, i.e. failing to provide an enabling disclosure is maintained essentially for reasons set forth in previous office actions.

Applicant urges that utilizing the specification and description of transcription units one would be able to make and use the invention to immunize against other pathogens, one of skill in the art utilizing the description in the specification would be able to make and use DNA transcription units for other hemagglutinin subtypes, and H1 and H7 are representative of the subtypes of influenza against which protection can be achieved.

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It is the examiner's position that the specification lacks sufficient guidance and teaching to enable the broad scope of the claims. The claims are broadly drawn to a method of immunizing a vertebrate against an infectious agent comprising administering a DNA transcription unit. As an initial matter, the examiner is interpreting "immunizing" to mean making disease resistant or disease free or protecting against disease. Secondly, the claims are so broadly drawn as to include a method of immunizing against all infectious agents. The infectious agents include all viruses (including HIV), all bacteria, fungi and parasites. However, the specification lacks sufficient guidance and teaching, via working examples, to enable one of skill in the art to make and use the antigens for a wide variety of infectious diseases. Indeed, applicant has argued that one of skill in the art would not readily accept the generation of immune responses in mice to HIV antigens to be applicable to immune responses in humans. Therefore it would require undue experimentation of one of skill in the art to make and/or use the method to immunize against all infectious agents.

19. The rejection of claims 1, 2, 4, 7-14, 17-24 under 35 U.S.C. §103 as being unpatentable over WO 90/11092 in view of Huylebroeck is maintained essentially for reasons set forth in the previous office actions.

Applicant urges that neither WO 90/11092 nor Huylebroeck provide motivation to combine the references, the early region of the SV40 genome is inappropriate for in vivo use in humans, the methods of Huylebroeck differ from the methods of the claimed invention, and there would not have been a reasonable expectation of success in achieving the desired results by combining the references.

It is the examiner's position that WO 90/11092 describes a method of delivering polynucleotides into the interstitial space of a tissue comprising the cell whereby the naked polynucleotide is taken up into the interior of the cell (page 6, lines 28-37). The polynucleotides may be from a variety of viral antigens and are not limited to HIV. Vaccination with nucleic acids containing a gene for an antigen can be by a variety of routes (page 37) and in pharmaceutically acceptable vehicles (pages 38-41). While WO 90/11092 does not describe the influenza hemagglutinin molecule, Huylebroeck describes the HA as being the most important viral antigen. The claims in the instant invention are not drawn to specific vectors, other than nonretroviral vectors, or regions of the vector. WO 90/11092 describes several promoter and vector systems which can be used (page 19). The claims are also not drawn to specific cell cultures systems, or methods of replication and amplification of vector DNA or a method of generating a DNA transcription unit.

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The claims are drawn to a method of immunization by administering a DNA transcription unit. Applicant is therefore arguing limitations which do not appear in the claims. Additionally, the modes of administration of antigens are well known, are well within the level of skill in the art and would be a matter of design choice.

New Grounds of Rejection

20. Claims 1, 2, 4, 7-14, 17-24 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The language of the claims is not as precise as the subject matter permits such that one may reasonably know what will infringe and what will not infringe the claims. The claims are indefinite in the recitation of "eliciting a humoral immune response, a cell-mediated immune response or both". It is unclear what applicant intends by a cell-mediated immune response as opposed to a humoral immune response. Does applicant intend a cytotoxic T cell response? Clarification is required in order to overcome this rejection.

The following is a quotation of the first paragraph of 35 U.S.C. § 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use

the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

21. The specification is objected to under 35 U.S.C. § 112, first paragraph, as failing to adequately teach how to make and/or use the invention, i.e. failure to provide an enabling disclosure. The claims are drawn to a method of immunizing by administering a DNA transcription unit, which transcription unit elicits a humoral or cell-mediated immune response or both. The specification lacks sufficient guidance and teaching to show that a cell-mediated immune response was generated. The specification merely enables the development of specific antibody (pages 11-16 and tables 1-9 of the instant specification and pages 5-7 of the Declaration submitted by Dr. Robinson 3/8/94). The specification lacks description of a cell-mediated immune response and therefore the examiner is not sure whether applicant intends a cytotoxic T cell response. Applicant has argued that one of skill in the art would be aware that production of cytotoxic T cells against a protein does not necessarily indicate that a protective effect will be achieved (page 7, under C of the response filed 8/25/95. Adopting this line of reasoning, it would appear that absent a showing of the generation of cytotoxic T cell immunity or cell-mediated immunity, one of skill in the art would not necessarily expect that because a protein generated antibody responses, does not indicate a simultaneous generation of cell-mediated immunity or cytotoxic T cell immunity. Thus in

view of all of the above, it is determined that it would require undue experimentation of one of skill in the art to make and/or use the invention.

Claims 1, 2, 4, 7-14 and 17-24 rejected under 35 U.S.C. § 112, first paragraph, for the reasons set forth in the objection to the specification.

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Chambers et al, (1988) describe the protection of chickens against lethal infection with influenza virus by the administration of a vaccinia-expressed hemagglutinin antigen.

23. Papers related to this application may be submitted to Group 180 by facsimile transmission. Papers should be faxed to Lynette F. Smith, Art Unit 1813 and should be marked "OFFICIAL" for entry into prosecution history or "DRAFT" for consideration by the examiner without entry. The Art Unit 1813 FAX telephone number is (703)-305-7939. FAX machines will be available to receive transmissions 24 hours a day. In compliance with 1096 OG 30, the filing date accorded to each OFFICIAL fax transmission will be determined by the FAX machine's stamped date found on the last page of the transmission, unless that date is a Saturday, Sunday or Federal Holiday with the District of Columbia, in which case the OFFICIAL date of receipt will be the next business day.

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24. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette F. Smith whose telephone number is (703) 308-3909.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Smith/lfs LFS
November 9, 1995

L. F. Smith
LYNETTE F. SMITH
PATENT EXAMINER
GROUP 1800

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